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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|---|-------------------------------|------------------------|
| 09/231,791 | 01/15/1999 | GIUSEPPE GUARINO | Q-52856 | 2603 |
| 7590 | 12/03/2008 | SUGHRUE, MION, ZINN, MACPEAK & SEAS 2100 PENNSYLVANIA AVENUE WASHINGTON, DC 200373202 | EXAMINER LEUNG, JENNIFER A | |
| | | | ART UNIT 1797 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/231,791 | GUARINO ET AL. | |
| | Examiner | Art Unit | |
| | JENNIFER A. LEUNG | 1797 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 10 October 2008.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 7-10 is/are allowed.

6) Claim(s) 1-5 is/are rejected.

7) Claim(s) 6 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on October 10, 2008 has been entered.

Claim Objections

2. Claim 6 is objected to because of the following informalities:

The Examiner suggests deleting the phrase, "characterized in that it further comprises in said catalytic bed:" (at line 5). Furthermore, the word --and-- should be inserted after "pressure drop;" (at line 15). Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is unclear as to the limitation Applicant is attempting to recite by, "loading the catalytic bed with a volume of catalyst smaller than said volume of catalyst," (line

20), since the preamble sets forth that the external shell is "loaded with a volume of catalyst," (lines 2-3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poussin (US 5,202,097).

Regarding claim 1, Poussin discloses the construction of an assembly having an unperforated cylindrical wall (10, FIG. 1) coaxial to the gas outlet wall (9, FIG. 1) in the catalytic bed, the unperforated cylindrical wall (10) extending from an upper end of the gas outlet wall (9) along a portion of the outlet wall for a predetermined length in the catalytic bed, such that once the catalyst is loaded within the catalytic bed, at least a portion of unperforated

cylindrical wall (10) remains below the upper level reached by the catalyst (see column 7, lines 19-21: the unperforated cylindrical wall is immersed in the catalyst bed). Poussin further discloses a free-space between the gas outlet wall (9) and the unperforated wall (10), (see, e.g., FIGs. 1 and 6). Poussin also discloses providing a capping means for closing an upper end of the free-space between the unperforated wall (10) and the gas outlet wall (9), in proximity to the upper end of the gas outlet wall, thereby preventing a bypass of the catalytic bed or a recycling to the catalytic bed of the gas entering and leaving the reactor.

Although Poussin does not expressly disclose that the unperforated cylindrical wall (10) covers the perforations of the gas outlet wall (9), it is noted that the figures of Poussin are schematic and do not demonstrate the sole locations of perforations in the tube. For instance, FIGs. 2 and 8 exhibit additional perforations in the tube (9) that were not illustrated in FIG. 1.

Poussin discloses the gas tube (9) is generally perforated (see column 7, lines 17-18). The cap (10) that covers the gas tube (9) functions to seal the gas tube with respect to the charge (see column 7, lines 19-22). Poussin also discloses that the cap (10) is immersed in the catalyst bed (see column 7, lines 20-22). Based on the teachings of Poussin, a person of ordinary skill in the art would have reasonably expected that the cap (10) would cover perforations in the gas tube (9) that extend above the catalyst bed and any perforations that extended above the catalyst bed would have been sealed by the cap (10). One of ordinary skill in the art would have reasonably expected that the cap (10) would have sealed the gas tube (9) from the charge whether or not perforations extend above the catalyst bed. "For obviousness under §103, all that is required is a reasonable expectation of success." *In re O'Farrell*, 853 F.2d 894, 904, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

Additionally, with regard to the limitation of the free space having a thickness great enough to allow said passage without causing an additional pressure drop, though Poussin does not disclose the size of the free space, it is held that one of ordinary skill in the art would have found it *prima facie* obvious to arrive at an optimum or workable range of the size of the free space by mere routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955) ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.").

Additionally, change in size and shape is not patently distinct over the prior art absent persuasive evidence that the particular configuration of the claimed invention is significant. See *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

With respect to the newly added limitation, as best understood, Poussin further discloses that the volume of catalyst (i.e., in the shaded region 31; FIG. 1) is smaller than the maximum available volume for catalyst in the catalytic bed (i.e., defined by the full annular volume between the gas inlet wall (7) and gas outlet wall (9)).

Regarding claim 2, Poussin discloses essentially the same invention as the instant claim but fails expressly to disclose that the unperforated wall (10) extends for a portion comprising between 5% and 50% of the length of the gas outlet wall (9). At the time of the invention, it would have been obvious to one skilled in the art to extend the unperforated wall for a distance comprising between 5% and 50% of the length of the gas outlet wall. The motivation would have arisen as a design choice. The length of the unperforated wall can also be considered a result effective variable. The wall could be extended while monitoring the extent of undesired

bypassing of the catalyst by the process stream. When the bypassing has dropped to an acceptable level, the wall is long enough.

Regarding claim 3, Poussin discloses essentially the same invention as the instant claim but fails expressly to disclose that the free space has a thickness of between 0.5 and 10 cm. At the time of the invention it would have been obvious to one skilled in the art to construct the free space with a thickness of between 0.5 and 10 cm. The motivation would have arisen as a design choice. The thickness can also be considered a result-effective variable. The thickness could be extended while monitoring the performance of the system. When the performance reaches an acceptable level, the thickness can be considered adequate.

Regarding claim 4, Poussin discloses the unperforated wall (10) being supported by the gas outlet wall (9); (Figure 1).

Regarding claim 5, Poussin (FIG. 1) discloses a gas outlet wall (9) having a diameter smaller than the diameter of the gas inlet wall (7) and of the unperforated wall (10). Poussin further discloses the unperforated wall (10) being supported by a gas-tight horizontal baffle (see FIG. 1), which protrudes above the upper end of and rests on the gas outlet wall (9).

Response to Arguments

5. Applicant's arguments filed October 10, 2008 have been fully considered but they are not persuasive. Applicant argues that,

"Poussin fails to disclose, at least, "an external shell comprising at least a catalytic bed (6) loaded with a volume of catalyst and provided with a gas inlet perforated cylindrical wall (7) and a gas outlet perforated cylindrical wall (8)," and "loading the catalytic bed with a volume of catalyst smaller than said volume of catalyst," as recited in claim 1.

Rather, Poussin merely discloses using a single catalysis of a single volume."

However, as best understood, the method of Poussin meets the claims, since Poussin discloses an external shell containing a volume of catalyst (i.e., in the shaded region 31) that is smaller than the maximum available volume for catalyst in the catalytic bed (i.e., defined by the full annular volume between the gas inlet perforated wall (7) and gas outlet perforated cylindrical wall (9)).

Allowable Subject Matter

6. Claims 6-10 are allowable (except for the objections to claim 6).

The prior art does not disclose or adequately suggest a heterogeneous synthesis reactor comprising the claimed combination of elements, and wherein the catalytic bed is not closed at its top, so as to allow for the axial passage of reaction gases to the catalytic bed.

The closest prior art to Poussin (see FIG. 1) discloses a heterogeneous synthesis reactor (1) comprising many of the claimed elements. However, the catalytic bed in the annular catalytic compartment (8) is covered by a flexible layer (19) and a filling of inert balls or particulate material (11,12,13), to provide a sealing against the axial passage of reaction gases to the catalytic bed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Calderola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/
Primary Examiner, Art Unit 1797